PATENT

IN THE UNITED STATES PATENT AND TRADEMARK
BEFORE THE BOARD OF APPEALS AND INTERFERENCES

Applicant	:	Dietmar Spanke
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Atty. Dkt. No.	:	SPAN3001C/FJD
Filed	:	November 14, 2003
Exr.	:	I. A. Alsomiri
Title	:	LEVEL MEASURING DEVICE OPERATING WITH MICROWAVES
Docket No.	:	SPAN3001 C/FJD
Customer No.	:	23364

REPLY BRIEF ON APPEAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

INTRODUCTORY COMMENTS

Pursuant to the provisions of 37 CFR 41.41, submitted herewith is Applicant/Appellant's Reply Brief on Appeal.

Any additional fees necessary for this appeal may be charged to the undersigned's Deposit Account No. 02-0200

In view of the Examiner's Answer, several points need to be addresses.

(1)

Once again it should emphasized that Otto et al. (U.S. 5,614,911) doesn't disclose – neither ex pressis verbis, nor implicit, nor inherently – the use of a digitized Intermediate Frequency signal (ZF) as stated by the Examiner.

Reading col. 5, lines 10 – 35 in connection with col. 4, lines 10 – 18 one could learn the following:

The echo signals received as a consequence of the transmission of pulses by the antenna are supplied via the directional coupler 34 to one input of a mixer 38, which at its second inputs gets a signal derived from the output signal of the generator 24 by the beam splitter 26. The ***envelope signal obtained by the mixing of the two signals in the mixer*** 38 is filtered in a low pass filter 39 and then amplified in an amplifier 40, the output of which is connected to a logarithmizing circuit 42 which compensates the attenuation of the echo signals as a function of the transit time. The logarithmized and amplified ***envelope signal HS furnished at the output of the logarithmizing circuit 42 and representing the echo function in analog form*** is supplied to a sampling circuit 44 which obtains therefrom, in the course of the reception phase following the transmission pulse, under control by the clock signal CL a series of sampled values which preferably are equally spaced in time. ***Each sampled value has the amplitude of the envelope signal HS at the instant of sampling***. An analog-to-digital converter 46 following the sampling circuit 44 converts each sampled value into a digital code group representing a number, the numerical value of which corresponds to the amplitude of the sampled value. The ***sequence of digital code groups represents the digitized echo function,*** the amplitude resolution of which is determined by the number of positions of the digital code groups and the time resolution of which is determined by the time spacing of the

sampled values obtained by the sampling circuit 44.

(2)

One known radar method is pulsed radar, in the case of which short pulses [=bursts] are periodically transmitted and in a reception phase following each transmission of a pulse the echo signals at the frequency of the transmitted pulse are detected. In this case [=pulse radar] ***the signal amplitude received in the course of each reception phase against time will directly constitute the echo function. Each value of this echo function corresponds to the amplitude of an echo due to reflection at a certain distance from the antenna.*** The position of the useful echo in the echo function will therefore directly indicate the distance to be measured. In other words, in the transmission circuit according to Fig. 2 the mixer 38 delivers only an (analogue) envelope signal HS (= ENV), which represents the echo function in analogue form. In the case of pulse radar, the echo function, represented by the envelope signal, is constituted by the signal amplitude of the echo signal, whereby each of the signal amplitudes corresponds to the amplitude of exactly one single echo pulse. In view of this, POSITA would recognize that - in addition to the step of mixing of the the echo signals and the signal derived from the output signal of the generator 24 - the mixer 38 as disclosed by Otto must inherently also realize the step of (amplitude) demodulating the analogue intermediate frequency signal, obtained by mixing the two signals at the inputs of mixer 38, for deriving the envelope signal representing amplitudes of incoming echo pulses. But, this step of demodulating the analogue Intermediate Frequency signal "destroys" the Intermediate Frequency signal and, thus, discreates any information about the high-frequency carrier signal hold by the IF signal.

At this point, Otto et al. discloses inherently the same as Lalla et al. (U.S. 6,087,978) at col. 5, lines 31 – 36 (also cited in the Appeal Brief, page 6).

Therefore, any rejection, based on the Examiner's assumption that the output signal of Otto's mixer 38 to the A/D converter 46 would inherently result in an intermediate frequency (page 4 of the Examiner's Answer), should fail.

(3)

At this point it should further be noted, that – contrary to the Examiner's view, it is not a question, whether Otto or Lalla disclose any frequency values for the repetition rate (i.e. > 1 MHz), the transmitting frequency (> 0.5 GHz), and the intermediate frequency (> 50 kHz), or not. But whether or not, Otto or Lalla disclose the use of a digitized Intermediate Frequency in the sense of the present invention and defined within the present claims. As stated above, they do not because they are absolutely silent about generating and storing digitized Intermediate Frequency signals.

To assist in illustrating the differences between Otto and the present invention, please refer to the attached drawing:

(4)

Regarding the citation of (http://amsglossary.allenpress.com/glossary/search?=p1&query=IF+signal), Applicant cannot follow the Examiner. According to applicant's understanding, prior art documents have to be understood in view of its own specification, drawings etc., but not in view of such a vague definition. By the way, referring to http://en.wikipedia.org/wiki/Superheterodyne_receiver, esp. Design and its evolution, one could recognize that Otto discloses conventional heterodyne receiver having analogue Demodulator followed by A/D converter. On the contrary, the present invention may be directed to a digital receiver receiving and storing digitized IF signal.

Because neither, Otto nor Lalla disclose the use of a digitized intermediate-frequency signal, they could also not suggest the use of a volatile-memory (RAM) for storing the sampling sequence representing said digitized intermediate-frequency signal.

The Board is urged to consider this appeal in light of the Brief on Appeal and this Reply Brief on Appeal.

Respectfully submitted,
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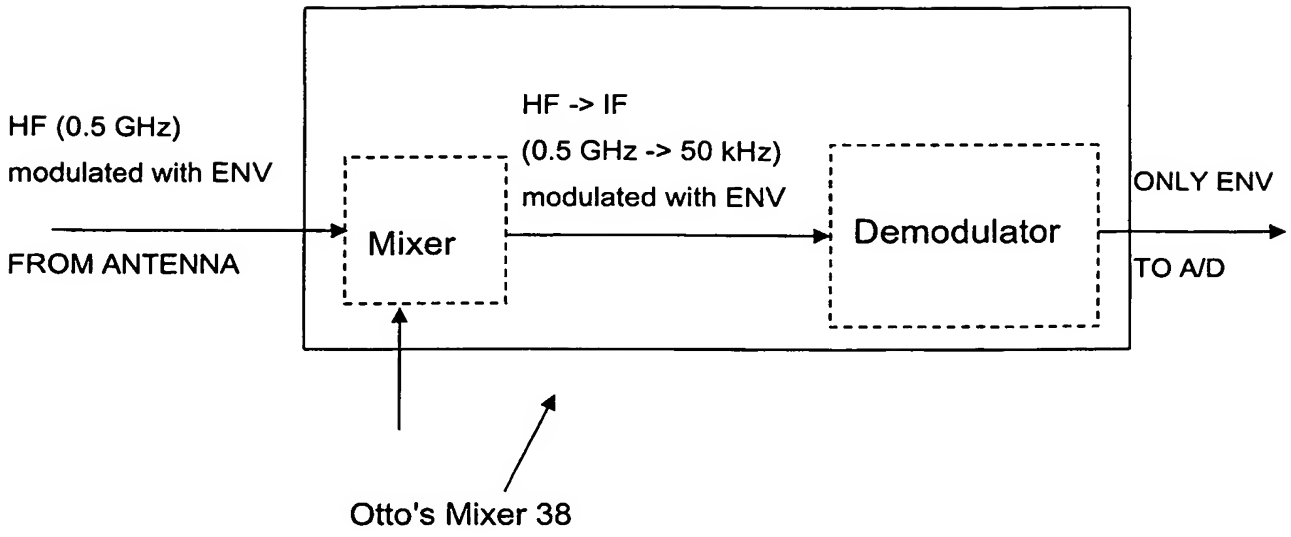
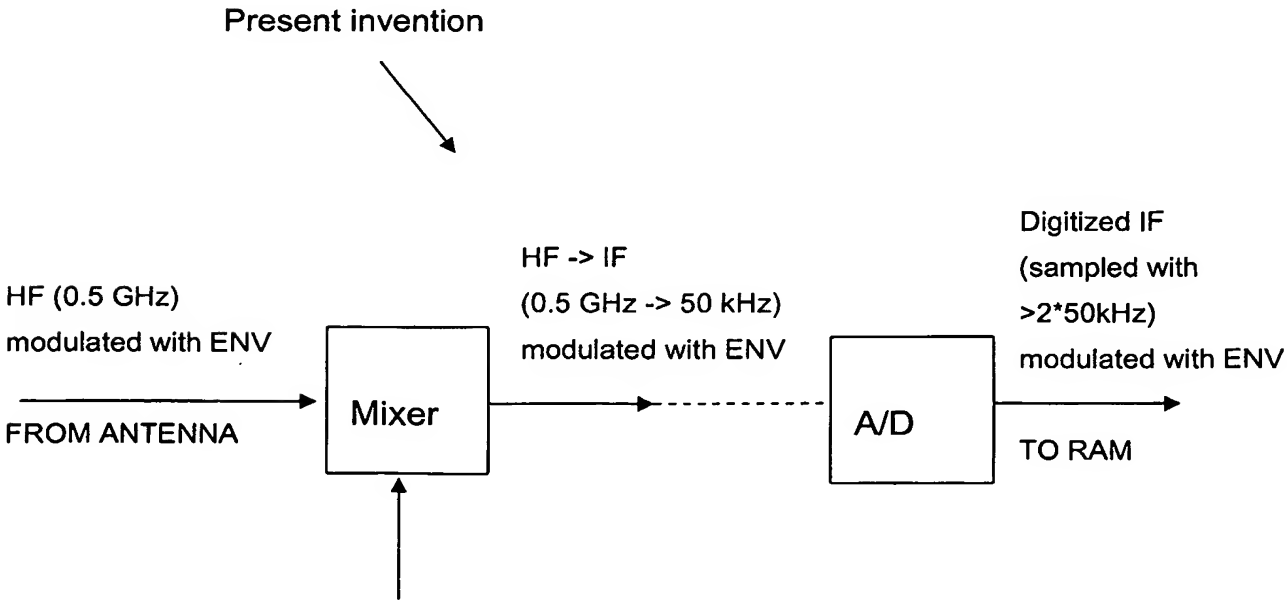

HF (0.5 GHz)
modulated with ENV
FROM ANTENNA
Mixer
HF -> IF
(0.5 GHz -> 50 kHz)
modulated with ENV
Demodulator
ONLY ENV
TO A/D
Otto's Mixer 38


Present invention
HF (0.5 GHz)
modulated with ENV
FROM ANTENNA
Mixer
HF -> IF
(0.5 GHz -> 50 kHz)
modulated with ENV
A/D
Digitized IF
(sampled with
>2*50kHz)
modulated with ENV
TO RAM